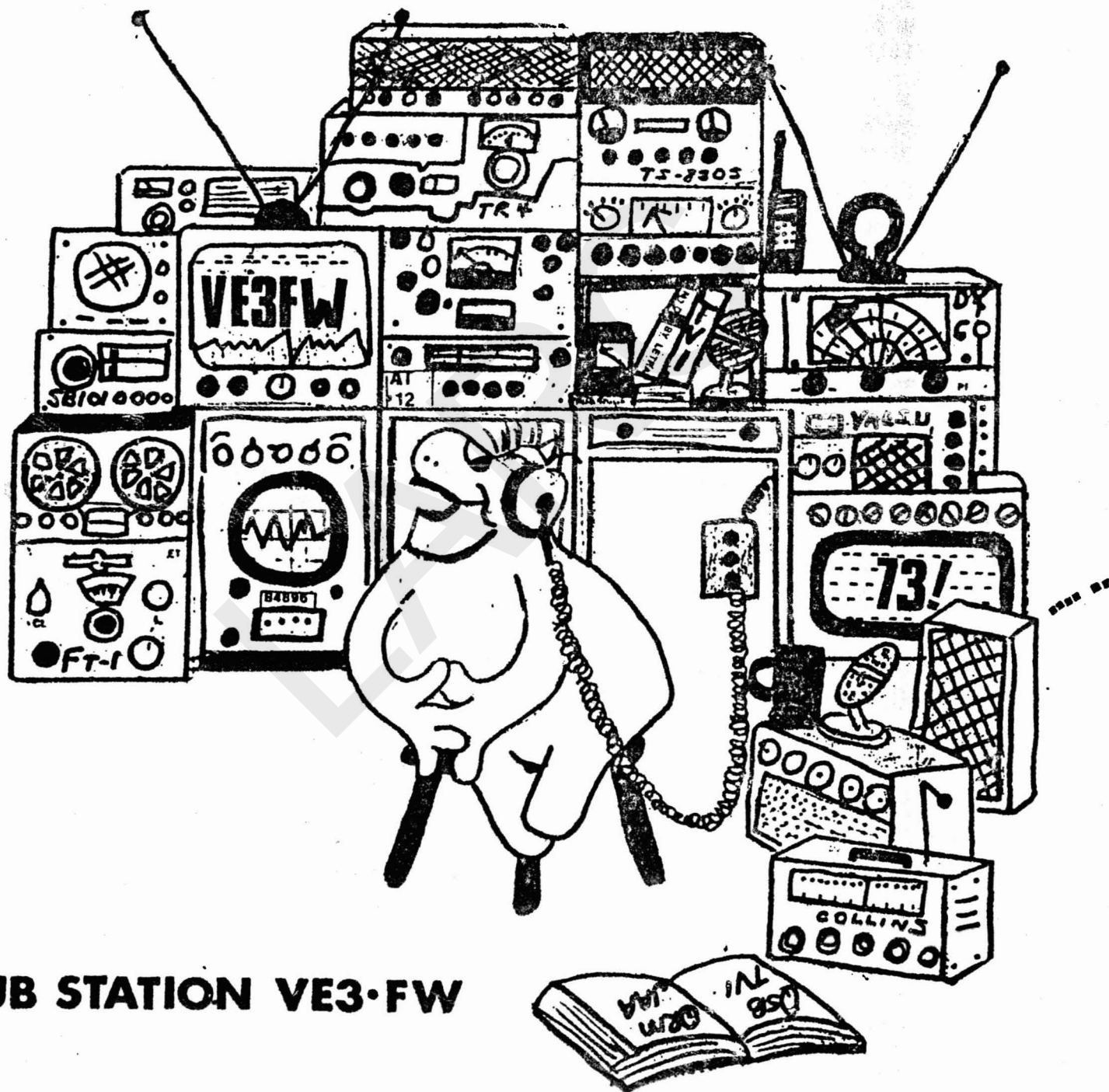


HI-Q

June 85

LAKEHEAD AMATEUR RADIO CLUB BULLETIN



CLUB STATION VE3·FW

Founded 1934

Incorporated 1979

HI-Q JUNE 1985

The June 14 meeting date is drawing near, and there is no need to fear. This is our annual election night, and everything should be alright.

We need a President to run the show, and a vice to keep things in tow. We need a secretary to take in dough and four directors complete the row. A new editor for Hi-Q is needed, and his words of wisdom are always heeded.

That makes eight people in all, to sit up front starting in the fall. So we hope to see you there, to take an up front chair!

1985 FIELD DAY

The L.A.R.C. will be having a Field Day at Kakabeka Falls campground on June 22nd & 23rd. Bob NHN and Linda NHX are the coordinators of this event. The Club will be providing the goodies for dinner at around 6 pm Saturday. The campground office needs to know how many of us will be out there and your lic. plate number. Get a hold of NHN or NHX for further info. Come out and help spend some money! (the club's)

THE PREZ SEZ

Here we are in June already--my how time flies when you are having fun. To start things off, on behalf of the Executive and myself, I would like to thank everyone for the support we have received during the past year. A lot has been accomplished, and a lot remains to be done. All the best to the new Executive.

Elections will be held at the June general meeting, and this is your chance to set the direction the club will pursue for the next 12 months. If you would like to take an interest in int, come on out and run for office.

At the May meeting and in the May issue of Hi-Q, a call for a field day coordinator was put out. With a bit of arm twisting, Bob VE3NHN and Linda VE3NHX agreed to take on the job. Please pass along any ideas or suggestions to either of them, and remember to attend this year's Field Day. It is set for the June 22/23 weekend.

VE3YQT is now equipped with autopatch facilities. For more info, a more detailed report has been included in this issue of Hi-Q.

To wrap things up for this month, and for the year, the Duluth Swapfest is now history. There was a good turnout of locals attending the event. A good turnout was also present from the group in Geraldton. Although none of us won any major prizes, a good time was had by all!

One final note: are you interested in a few club socials or get togethers over the summer months? Some interest has been sparked regarding a BBQ and a boat cruise. If you would like to get something going, just leave a message with our "official bulletin station" VE3JAA.

73 and see you at the meeting.

Tom VE3CX

REPEATER NEWS

A lot of concern was raised at the last meeting concerning VE3YOT running with a temporary antenna at the 100 foot mark. Range has definitely suffered, but considering the alternatives, we don't have a lot of room to manouver. \$2300 for a new chunk of heliax does not particularly appeal to me, and every effort to save what we already own is being made.

How do we know if we were successful or not? Well, time will tell once we have completed the resurrection process. Probably towards the end of June, the heliax for the antenna at 350 feet will be reconnected, and we will play it by ear from there.

On the plus side of things, the autopatch is operational on VE3YOT. A new touch tone line has been installed, and to access it, use *1 to bring it up, # to terminate. When the new mark 4 controller is put on line, many more features will be added. In the meanwhile, a bare bones autopatch is available.

What is going to happen this summer is still up in the air, as a lot of things will be happening in June in terms of fund raising. We have set a target of \$17,000 for repeater improvements including new heliax, a new controller, new receiver, transmitter and power supply. If things go as planned, quite a few changes will be made to the repeater during the summer.

In the event things don't go as planned, we hope that the raffle will generate enough money to purchase the new controller, assuming the heliax is OK. In a nutshell, that pretty well sums things up. Hang in there--we're doing our best.

Tom VE3CX.

RAFFLE UPDATE

Ticket sales have tapered off to a trickle, but the tickets are still moving (hopefully). Gary VE3CK and Tom VE3CX still have a good supply if you would like some more. In order to save a last minute rush, we would like all sold books turned in by the meeting night. We would like the balance (sold or unsold) to be turned in by Monday, June 24.

As an "extra" incentive, two prizes will be awarded based on ticket sales. Free membership for the 1985/86 year will be awarded to the person who sells the most tickets, and to the person who sold the winning ticket. Keep up the good work.

LARC

VE3TBU

For the past two years, Thunder Bay has had a UHF repeater, used mainly as a "testing ground" while I have been working on a new controller using a vic 20 computer. It is a bit out of the mainstream, but UHF does have certain advantages over 2 meter operation.

Before the machine went into operation, several amateurs in Duluth mentioned a few intriguing aspects that seemed appealing. For starters, equipment such as duplexers is smaller. Coverage is about 90% of that of 2 meters with similar equipment, but has fewer dead spots owing to better penetration. I don't know for sure if that is true or not, but the only way to find out is with side by side comparisons.

My main interest in another repeater was to adapt some ideas incorporated into VE3TBR into a different and less expensive computer. In general, the two repeaters operate the same. Each computer (TRS-80) has certain advantages over the other, but in general, the vic has a few important advantages.

First and foremost is cost. The Vic is less than a quarter of the TRS-80, and has a built in sound generator. The TRS-80 requires 3 voltages (+12, +5 and -5) to operate VS one for the vic (+5). However, the TRS-80 is capable of 48K of memory on board, while the vic can have 32K, mostly external. So much for comparisons.

Thanks to Duanne, VE3NHF who built a new interface card for the repeater. I am currently modifying the repeater to use this new card. When things are running with the new card, I will be working on a 2 meter cross band link using an icom IC 225 donated by Vic, VE3JAR. Frequency selection can be done from UHF by entering a 2 meter frequency, and the computer will take care of the rest.

When the computer is not running things, I have another "bare bones" controller to keep the repeater operational. This system has worked out quite well, with the machine being down for 2 or 3 days in the past two years for modification. The repeater is quite reliable and I have a few more "goodies" in the planning stages, including a 10 meter crossband link. This will be added as time permits.

At present, the repeater does not see an excess of activity. This does have its advantages in that extended QSO's have taken place without having to worry about tying up the machine. If you would care to join the "UHF boys", the repeater is on 442.500 in 447.500 out. At present, the icom IC-4AT is the most popular rig around, and Ed VE3KRP has a UHF base station.

At present, the repeater is owned by myself, save for a few donations towards the cause. As it is a fairly specialized repeater serving a small group, that is probably how it will remain. However, the machine is open to all who care to use it. 73 and see you on 440.

73 Tom VE3CX

DIRTY LAUNDRY

VE3CK and family made an excursion to the wild west. The agenda even included swapping a few lies with the right Reverend Ronnie, VECAEZ (ex VE3KRJ). VE3NHP has returned to cottage country with wall paper in hand (?) in search of employment opportunities. All the best Duanne! Ever try trolling with a 60 pound lure? The cat is unbelievable! VE3OPI now holds the DXCC (DX coffee call) record--from doq Lake. VE3KRP/B is QRV on 146.04. A repeater record has been set--all 3 machines running simultaneously. VE3KRN is a step closer to heading down the aisle--he gave the YL the repeater dial in number. Looks serious. Following the true amateur tradition of wattmeter testing, VE3HPT wanted to see if the bird (Diawa) would sprout wings--no such luck. VE3NHN has headed west in search of the elusive TS-830 S and TL 922. VE3CX has (had) a rig that is (was) in high demand. VE3BCD and VE3HFS also made excursions west--hey guys, what's going on here? It is rumoured that VE3JAA is forwarding his pension checks to P.O. Box 2571--thanks Arnold. Since the antenna uploading season is closed, the 807 downloading season is open. VE3JAU has a couple of new black boxes to play with. Not wishing to follow the crowd, VE3NNR headed east.

TO KEEP OR NOT TO KEEP
== == == == == ==

This heading might sound strange for the beginning of a TECHNICAL ARTICLE but I often thought this about RECHARGEABLE NICKEL CADMIUM batteries.

The fact that I was able to get a hold of discarded battery packs, prompted me to build a reliable battery charger. It is interesting to find out about other uses for this charger (later).

First a few facts about NICADS (there are many very good articles about nicads, that's why I give only a few facts)

1: To find a safe charging current for your nicad, divide it's Amp/h or mA/h rating by 10. For example, a 450 mA/h battery can be left on charge FOR AS LONG AS YOU WANT at a rate of $450/10$ equals 45 mA. It is still wise to check that the battery does not run to warm. If that is the case, just reduce the charging current somewhat.

2: If a battery starts to get hot while charging you can bet your purple socks on it that it is charging at a too high a current (anybody with purple socks ???)

3: Nicads like to be used (the right way that is). If you don't charge and discharge them in a regular cycle they get lazy and don't deliver when you need them most.

There are four important features incorporated in this charger.

1: You can set the charging current anywhere between 25 and 200 mA.

2: It will charge as many as 1 to 16 (1.2 volt) nicads.

3: It will automatically set the right voltage for the amount of batteries on charge.

4: Last but not least, the current is kept at a CONSTANT rate.

Look at Fig. 1. This is the basic circuit for a constant current generator. A current flows through R1 - D1 - and D2. The two diodes are silicon diodes and therefore a voltage drop of 1.2 Volt develops across the two diodes.

This voltage is also between the base of Q1 and the bottom end of R2. This is a reference voltage which stays the same. We know (or should) that a silicon transistor drops 0.6 Volt between base and emitter. What is left is another 0.6 Volt across R2.

This voltage does not change either. FACT !! If the voltage across R2 is constant, (0.6 V) AND R2 is of a fixed value, then the current must stay constant (remember OHM's LAW).

Suppose our supply voltage is 30 Volt. We have 0.6 Volt across R2 then there must be $30 - 0.6 = 29.4$ Volt between the emitter of Q1 and the positive supply rail. If our load drops 6 Volt (five 1.2 V nicads), then the transistor will drop $29.4 - 6 = 23.4$ Volts between emitter and collector.

LARC

Now for the final design of our battery charger lets take the minimum current at 15 mA. R2 will have to be $R2=0.6/0.015$ that is 40 ohm. If the maximum current is to be 200 mA then $R2=0.6/0.200$ that is then 3 ohm. Because our maximum current of 200 mA we have to use a fixed resistor of 3 ohm and if we use a potentiometer of 50 ohm in series with it our minimum current is then $0.6/53$ gives 11 mA.

The power rating of these resistors can be a minimum of (ohm's law again) Voltage x current is $0.6 \times 0.200=0.12$ Watt. To be sure, use 0.5 Watt resistors and you can't go wrong.

The actual circuit calls for a transformer with a secondary voltage of 24 Volt at 300 mA, a bridge rectifier and a capacitor of 1000 uF at 50 Volt. If your needs are different you can use different voltages and ratings accordingly.

I found it a must to install a mA meter in the circuit to set the current accurately. Use that as an option, either a build in meter or calibrate the settings on the potentiometer once with a meter.

Fig. 2 gives you the final circuit. The switch puts a shunt across the meter (100 mA meter) to make it easier to set low and high current levels. Feel free to experiment with and or change values for R2 and R3 to give you current settings that suit your particular needs. DON'T EXPECT the calculated resistor values to give the calculated current. There are several factors and parameters (transistor, diodes etc) who effect these values, but, you can expect to be reasonably close (we are not working with military specs).

A few uses besides charging batteries are:

- 1: You can safely short the load terminals together and set the current at let's say 15 mA. Now you can use it as a continuity tester with an adjustable constant current.
- 2: Test LED's (set current at about 20 mA). It is interesting to see how little the brightness is affected between 10 and 30 mA.
- 3: Test diodes (watch your current setting).
- 4: Fast charge a nicad, like a 450 mA/h battery, say in 3 hours at 150 mA.
- 5: Find the current and voltage at which a DC relay pulls in reliably. Just hook up your relay on the charger, increase the current and, when the relay energizes, measure the voltage across the coil. This is great to find out the voltage of a relay coil, if the markings have come off. Of course this only works with relays that have a voltage rating that your charger can supply. E.G 6 - 12 - 24 Volt relays.
- 6: If you ever need a constant current source, you can design your own with the information provided.
- 7: Think up some of your own uses

LARC

Keep one thing in mind, the transistor will dissipate a fair amount of power if you only charge a few batteries. Do mount it on a heatsink or, on the enclosure of your charger.

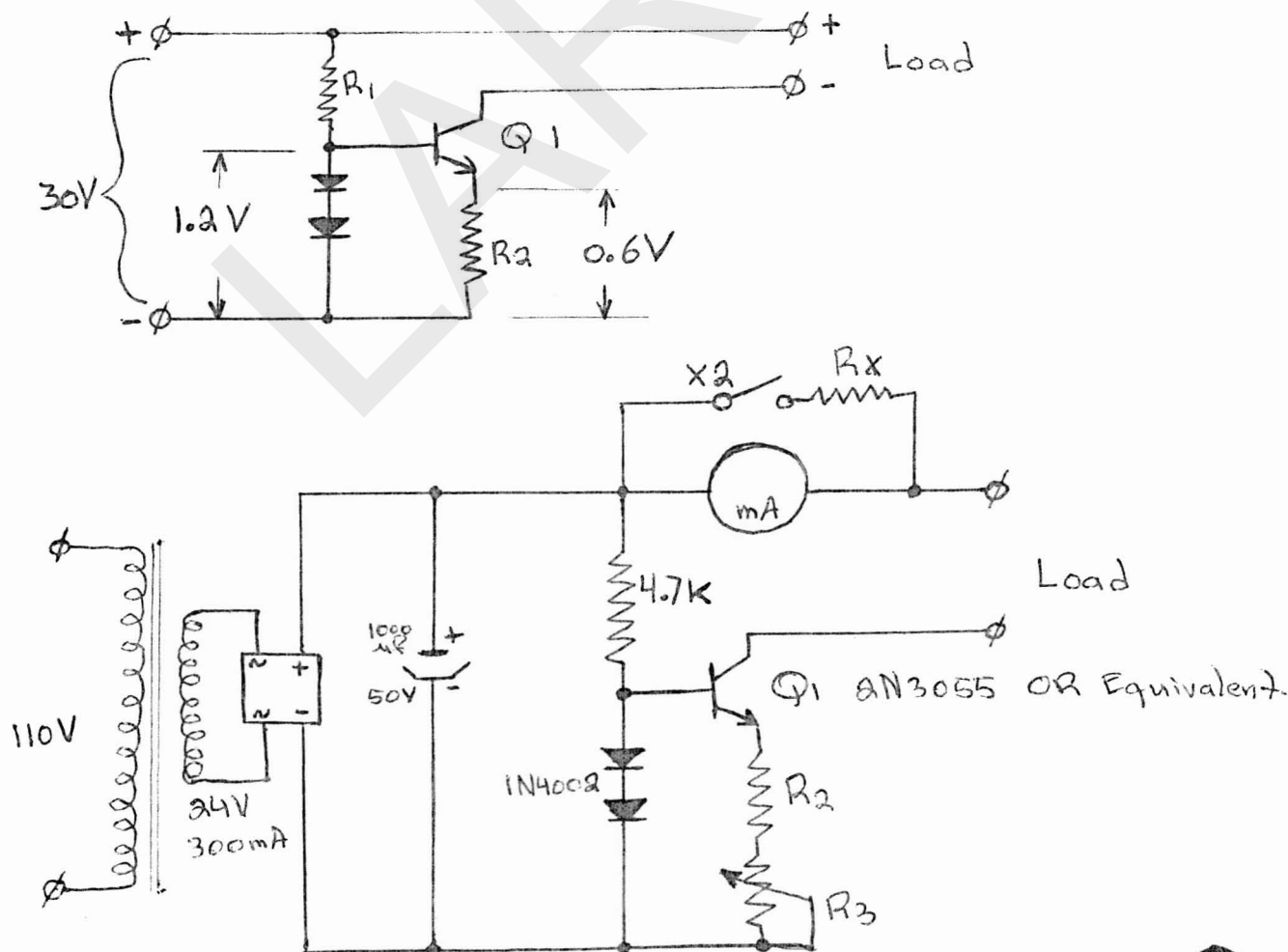
Sometimes a nicad won't charge and shows shorted. Often you can burn away the short by discharging a (charged) capacitor through the battery. Take a 5000 μF 50 V. Electrolytic capacitor (or make one up by paralleling several different ones) and charge it with, yes you guessed it, the battery charger. The capacitors will charge at a constant current and when they are full the meter reading drops to zero.

Then with jumper leads, hook it up to the nicad (one cell at the time) with the right polarity. A spark will be drawn and, if your lucky, the nicad can be used again. This may have to be repeated several times to get results. If after four or five times the nicad still shows a short, bury it with honour. It's in nicad heaven for sure.

I hope you will get as much use out of this project as I do, because this is a charger you can use for your PORTABLE'S battery pack as well as any other.

73 and good luck from Tony Lelieveld VE3DWI, Wawa.

Fig: 1



LARC

FIELD DAY CHECK LIST		
ITEM	HAVE	NEED
Rigs, mike, Key		
Back-up Rig		
Shelter		
Furniture		
Extension cords		
Clock		
Pencils and Pens		
Light		
Small Tools		
Soldering Iron		
Ground Rod		
Ground Wire and Clamp		
Antenna		
Towers		
Flashlight		
Insect Repellant		
Rain Wear		
First Aid Kit		
Scratch Paper		
Eating Utensils		
Cup and Plate		
Cooler & 807's		
Sleeping Bag and Mattress		
Garbage Bags		
Hammer		
Multimeter		
Bottle Opener		
Coax fittings		

Lakehead Amateur Radio Club History Project

COURTESY OF: DWART HARTENFARKER WKRP